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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,456	07/23/2003	Paris Smaragdis	MERL-1464	2550

22199 7590 01/24/2007  
MITSUBISHI ELECTRIC RESEARCH LABORATORIES, INC.  
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EXAMINER
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PIERRE, MYRIAM

ART UNIT	PAPER NUMBER
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2626

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/626,456

Applicant(s)

SMARAGDIS, PARIS

Examiner

Myriam Pierre

Art Unit

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Large et al. (5,751,899) in view of Jarman et al. (2001/0027382).

As to claim 1, Large et al. teach

A method for detecting components of a non-stationary signal, comprising:

acquiring the non-stationary signal (Abstract, non-stationary signal to determine components of a signal);

Large et al. do not teach constructing a non-negative matrix of the non-stationary signal, the matrix including columns representing features of the non-stationary signal at different instances in time and factoring the non-negative matrix into characteristic profiles and temporal profiles.

However, Jarman et al. do teach constructing a non-negative matrix of the non-stationary signal, the matrix including columns representing features of the non-stationary signal at different instances in time (page 1 paragraph 4 and page 6 paragraph 83; the signal can represent transducer or acoustics) and factoring the non-negative matrix into characteristic profiles and temporal profiles (page 3 paragraph 38 and Figs. 12A-B).

Therefore, it would have been obvious to one of ordinary skill in the art to implement the analysis of signal from non-stationary structure representing music into the identification of features in indexed acoustic data in order to provide a greater confidence in separating actual signals from noise with less signal loss, and minimize adverse effects of low signal to noise ratio, page 1 paragraph 8.

As to claim 2, which depends on claim 1, Large et al. do not teach in which the non-negative matrix has  $M$  temporally ordered columns where  $M$  is a total number of histogram bins into which the features are accumulated, such that  $M=(L/2+1)$ , for a signal of length  $L$ .

However, Jarman et al. do teach in which the non-negative matrix has  $M$  temporally ordered columns where  $M$  is a total number of histogram bins into which the features are accumulated, such that  $M=(L/2+1)$ , for a signal of length  $L$  (page 2 paragraph 21; the total length is the half plus one, which is an overlapped signal or displacement from one point of origin and the response which represents an intensity at that displacement)

Therefore, it would have been obvious to one of ordinary skill in the art to implement the analysis of signal from non-stationary structure representing music into the identification of features in indexed acoustic data in order to detect or characterize transient features from datasets that incorporate a first index value, a second index value, and a response, page 1 paragraph 8.

As to claim 4, which depends on claim 3, Large et al. do not teach in which the non-negative matrix is expressed as  $R \times M \times N$ , the temporal profiles are expressed as  $R \times M \times R$  and the characteristic profiles are expressed as  $R \times R \times N$ , where  $R \leq M$ , where  $R$  is a number of components to be detected.

However, Jarman et al. do teach in which the non-negative matrix is expressed as  $R \times M \times N$ , the temporal profiles are expressed as  $R \times M \times R$  and the characteristic profiles are expressed as  $R \times R \times N$ , where  $R \leq M$ , where  $R$  is a number of components to be detected (page 1 paragraph 4 and page 6 paragraph 83; the signal can represent transducer or acoustics) and factoring the non-negative matrix into characteristic profiles and temporal profiles (page 3 paragraph 38 and Figs. 12A-B).

Therefore, it would have been obvious to one of ordinary skill in the art to implement the analysis of signal from non-stationary structure representing music into the identification of features in indexed acoustic data in order to provide a greater confidence in separating actual signals from noise with less signal loss, and minimize adverse effects of low signal to noise ratio, page 1 paragraph 8.

As to claim 5, which depends on claim 1, Large et al. teach in which the non-stationary signal is an acoustic signal (col. 9 lines 44-45).

As to claim 6, which depends on claim 1, Large et al. teach the non-stationary signal is a 2D visual signal (Fig. 2A-2B).

As to claim 7, which depends on claim 1, Large et al. do not teach in which the non-stationary signal is a 3D-scanned signal and frames of the signal represent volumes.

However, Jarman et al. do teach in which the non-stationary signal is a 3D-scanned signal and frames of the signal represent volumes (acoustic transducer) (Fig. 9 and page 3 paragraphs 40-42; the data can represent acoustic transducer or microphone which necessarily represents volume).

Therefore, it would have been obvious to one of ordinary skill in the art to implement the non-stationary processing of music into a three dimensional representation of acoustic transducer or volume of Jarman et al., because Jarman et al. teach that this would provide identification or characterization of spectral peaks within the indexed dataset or spectrum, page 3 paragraphs 40-42.

As to claim 8, which depends on claim 4, Large et al. do not teach in which the number of components  $R$  is known.

However, Jarman et al. do teach in which the number of components  $R$  is known (page 4 paragraph 44).

Therefore, it would have been obvious to one of ordinary skill in the art to implement the non-stationary processing of music into a three dimensional representation of acoustic transducer or volume of Jarman et al., because Jarman et al. teach that this would provide characterization of the dispersion distribution and constructing a critical value for whether or not a peak is present, page 4 paragraph 53.

As to claim 9, which depends on claim 1, Large et al. do not teach in which the number of components R is an estimate number of components.

However, Jarman et al. do teach in which the number of components R is an estimate number of components (page 4 paragraph 44).

Therefore, it would have been obvious to one of ordinary skill in the art to implement the non-stationary processing of music into a three dimensional representation of acoustic transducer or volume of Jarman et al., because Jarman et al. teach that this would provide robust estimation that is used so that the estimated variance of the dispersion will not be influenced by transient features, page 3 paragraphs 40-42 and 54.

### *Conclusion*


3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. see PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Myriam Pierre whose telephone number is 571-272-7611. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Myriam Pierre  
AU 2626  
01/20/07

  
**ANGELA ARMSTRONG**  
**PRIMARY EXAMINER**